HOB Enterprise Access: HOBLink J-Term User Manual

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User Manual

HOB Enterprise Access and HOBLink J-Term software and documentation 2004 by HOB

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Table Of Contents

1. HOB Enterprise Access Product Family 1
1.1 Introduction 1
1.1.1 Overview 1
1.1.2 General Requirements 1
1.1.3 Launching HOB EA Administration 2
1.1.4 Launching a HOB EA Application 2
1.1.5 JAVA Web Start 3
1.1.6 How to Run HOBLink J-Term 4
1.1.7 How to Install HOB EA Applications on Operating Systems with a GUI 5
1.1.8 How to Install HOB EA Applications on OS/400 Systems 5
1.1.9 How to Install HOB EA Applications on Operating Systems without a GUI 7
1.1.10 How to Install HOB EA Applications on z/OS Systems 8
2. HOB Enterprise Access Components 11
2.1 HOB EA Server 11
2.1.1 Definition 11
2.1.2 EA Server Function 11
2.1.3 How to Configure the EA Server 11
2.1.4 Logging on to the HOB EA Server 11
2.2 HOB Proxy Server 14
2.2.1 How to Run the Proxy Server Under Windows NT / 2000 15
2.2.2 How to Run the Proxy Server on OS/400 Systems 16
2.2.3 How to Run the Proxy Server on z/OS Systems 16
2.2.4 How to Run the Proxy Server on z/OS Systems as a Started Task 16
2.2.5 How to Run the Proxy Server on Other Operating Systems 17
2.2.6 Proxy Server Settings 17
2.3 Client Component 17
2.4 HOB Enterprise Access Administration 18
2.4.1 Installing HOB EA Administration 20
2.4.2 Startup Options 21
2.4.3 Importing Users 21
3. HOBLink J-Term 23
3.1 Welcome to HOBLink J-Term 23
3.2 HOBLink J-Term Session Manager 23
3.2.1 Options 23

3.2.2 Cloning Sessions 24
3.3 HOBLink J-Term Session Editor 25
3.3.1 Options 25
3.3.2 Display Session 25
3.3.3 Printer Session 26
3.3.4 User Defined Options 26
3.3.5 Print Parameters for HOBLink J-Term 27
3.3.6 Map Displayable Attributes 28
3.3.7 Schemes 30
3.4 Connection Types 30
3.4.1 Select Connection Type 30
3.5 Host Printing 31
3.5.1 GDI Print (Graphical Display Interface) 31
3.5.2 Native GDI Windows Print (only for Windows) 31
3.5.3 Escape Print 31
3.6 Parameters for HOB EA Applications 33
3.6.1 Parameters for the Applet 33
3.6.2 Parameters for the Application 34
3.6.3 Parameters for HTML Pages Using the Prefix "Auto" 35
3.6.4 Parameters for the Administration Tool "removeCC.html" 36
3.6.5 URL Parameters for WebProfile 36
3.7 HTML Pages 37
3.7.1 HTML Pages for Emulation / Administration Tools 37
3.7.2 HTML Pages for Secure SSL Connections 38
3.7.3 HTML Pages for the Cached Client / SSH Security 38
3.8 Additional Tools 38
3.9 COM Interface Support 39
3.10 Information about EHLLAPI-Bridge 39
3.10.1 Requirements 39
3.10.2 How to Install the EHLLAPI Bridge 39
3.10.3 Supported Subsets 39
3.10.4 Sample Program 39
3.10.5 Tools for Diagnosing Errors 39
3.11 Introduction to Open Host Interface Objects for Java 40
3.12 Macro Import Utility 41
4. HOB Telnet Resource Manager 43

4.1 Configure Resource Names using TRM 43
4.2 Configure TN3270 and TN5250 Session Resource Names 43
4.2.1 There are three different ways to these resource names: 43
4.2.2 Importing and Exporting Configured Entries 44
4.2.3 Export TRM file 44
4.2.4 Import TRM files 45
5. Error Messages 47
5.1 Common Error Messages 47
5.2 SSL Error Messages 49
6. Glossary 63
7. Index 67

1. HOB Enterprise Access Product Family

1.1 Introduction

This introductory section of the document is intended to provide you with generally applicable, basic knowledge for HOB Enterprise Access (in the following, HOB EA) and the HOB EA applications. HOBLink J-Term is a member of the HOB EA product family. For more detailed information, please refer to the online help / installation guide found on the product CD and / or included with the product download.

1.1.1 Overview

HOB Enterprise Access is a product that grants maximum flexibility to achieve a single point of administration for all HOB EA applications. This type of administration requires the installation of HOB Enterprise Access as a server component for the HOB EA applications on a computer acting as a server PC. This server PC stores the user settings of all HOB EA applications in a database to which all users must log on. After users attach to this server PC, the user settings are downloaded via TCP/IP. The downloaded user settings make it possible for users to launch the HOB EA applications they have been authorized to use.

1.1.2 General Requirements

1.1.2.1 EA Server

The EA Server can be run on any computer supporting the Java Virtual Machine 1.3 or later. The EA Server is an application without a GUI that runs invisibly in the background.

1.1.2.2 Client System

From the Client side every common browser with full Java 1.1.4 support can be used:

- Microsoft Internet Explorer 4.0 and higher
- Netscape Communicator 4.5, 6 or 7
- Sun HotJava Browser

Alternatively, you can use Java Web Start, which requires no browser support and works browser independently.

1.1.2.3 Web Server

HOB EA applications can be installed on the following web servers (This list is not exhaustive):

- Microsoft Internet Information Server 3.x or 4.x
- Peer Web Services
- Personal Web Server

- Apache HTTP Server
- Lotus Go, Domino and Domino Go
- IBM HTTP Server
- Netscape Enterprise Server 3.x

1.1.2.4 Memory Requirements

The following data refer to a typical installation and only supply approximate values. The actual values depend on the operating system in use.

- The installation requires approx. 90 MB of hard disk space.
  For a large number of files exceeding 1 KB this value may increase.
- Every user created uses approx. 0.5 KB of hard disk space.
- EA Server and Proxy Server each require approx. 5 MB free RAM, depending on the installed Java Virtual Machine (at least version 1.3).

1.1.3 Launching HOB EA Administration

When you launch HOB EA Administration for the first time use the following entries:

User Name: `administrator` (this field is not case-sensitive)

Password: `adminpw` (this field is case-sensitive!)

For security reasons, change the password before you log on the next time. The new password is not stored in the specified `startup.hxml` file, but is stored locally on the computer where HOB Enterprise Access is installed.

1.1.4 Launching a HOB EA Application

You can launch a HOB EA application in two ways, each of which requires a different procedure:

1.1.4.1 As an Applet

When running an HOB EA application as an applet, you can specify certain parameters for the respective HTML page; this automates the logon to a great extent. Simply specify the required parameters directly on the corresponding HTML page.

1.1.4.2 As an Application

When an HOB EA application is running as an application, it always uses the startup options defined in the `startup.hxml` file in the following subdirectory of its installation path:

```
<installation directory>/www/lib/hob/props/
```

You can complete the program arguments of the EXE file of HOB EA applications with the following parameter, in order to use a different HXML file:

```
/JTerm.exe -suserdefined.hxml
```

The file name is appended to the parameter `-s` without any blank in-between. If the file name uses blanks you must put the entire parameter in quotation marks, e.g. "`-suserdefined settings.hxml`".

1.1.5 JAVA Web Start

Compared to conventional applets, Java Web Start applets can be launched without using a web browser. Java Web Start also provides an update mechanism which automatically updates applets installed on clients once a newer applet version is detected on the web servers.

When Java Web Start is run the second time, users get a chance to create a desktop icon on the client automatically. This makes it easier to run Java Web Start.

1.1.5.1 Requirements

1. Client

- Java Web Start, version 1.0.1, or later
- Supported operating systems:
  Windows 98 / NT / 2000 / ME / XP, LINUX, Solaris and Macintosh OS X

The Java Virtual Machines, version 1.2.x and 1.3 require Java Web Start to be installed additionally. Version 1.4 or later Java Virtual Machines, however, already include Java Web Start as an installation component.

For further information, please see: http://java.sun.com/products/javawebstart/

2. Server

Run the server installation of HOBLink J-Term on the server (download via HTTP/HTTPS).

If necessary, configure the JNLP MIME Type (application/x-java-jnlp-file) of the JNLP file manually.

Tips...

Sun Microsystems suggests the following procedure:

Configure the Web server to use the Java Web Start MIME type by setting all files with the `.jnlp` file extension to the application/x-java-jnlp-file MIME type:

`application/x-java-jnlp-file MIME type`

Most Web browsers use the MIME type returned with the contents from the Web server to determine how to handle the particular content. The server must return `application/x-java-jnlp-file MIME type` for JNLP files in order for Java Web Start to be invoked.

Each Web server has a specific way in which to add MIME types. For example, for the Apache Web server you must add the following line to the .mime.types configuration file:

`application/x-java-jnlp-file JNLP`

Check the documentation for the specifics of your Web server.

1.1.5.2 How to Create and Configure a JNLP File

Configure the file `JLaunch.jnlp` (HOBLink J-Term) or `JWT.jnlp` (HOBLink JWT) in the following directory:

```
<EADIR>\www\lib
```

Replace the following strings by the actual custom data:

```
codebase="http://myserver.mydomain.com/HOB_EA/lib"
```

Replace `HOB_EA` by the share name of the Web Server.

1.1.5.3 Supported Parameters

The following parameters determine the applet window size, e.g.:

```
width="600"
height="320"
```

If necessary; you can enable the following commented parameters. For further information, please see the online help .

```
<param name="xxstartup"     value="startup.hxml">
<param name="xxwebprofile"  value="Y">
<param name="xxuserhome"    value="C:\Program Files\myHomeDir">
<param name="xxmultihome"   value="Y">
```

1.1.5.4 HOBLink J-Term Parameters

If you have changed the file name `JLaunch.jnlp` you must also customize the following reference parameters to reflect the actual name:

```
href="JLaunch.jnlp"
```

1.1.6 How to Run HOBLink J-Term

Run the respective `.jnlp` file to run HOBLink J-Term with Java Web Start.

This can be done in two ways:

- **Distribution Via Web Server**
    1. Copy the respective `.jnlp` file to the web server.
    2. Create an HTML page including a link to this file (such as the link "Java Web Start" on the initial page of HOBLink J-Term).
    3. Load the HTML page in the browser and select the link.
- **Distribution Via Network or Local Drives**
    1. Copy the respective `.jnlp` file to the network or local drive.
    2. Double-click on the name of the `.jnlp` file or create a desktop link.

1.1.7 How to Install HOB EA Applications on Operating Systems with a GUI

1. Install the desired HOB EA application from the HOB Enterprise Access CD.
2. In the course of the installation, select the product name that indicates "Enterprise Model," to include HOB Enterprise Access in the installation procedure.
3. Apply web sharing to the directory `..\www`, e.g. with the virtual directory name `HOB_EA`.

For information on how to run HOB EA applications with WebProfile, please refer to the relevant online help.

1.1.8 How to Install HOB EA Applications on OS/400 Systems

1. JAVA for an OS/400 system, version 1.2 must be installed on the OS/400 system. Use the command `JAVA *VERSION`, to verify the version number.
2. Create a new directory, e.g. `/QOpenSys/HOB_EA`
   In the following description, the installation directory (`/QOpenSys/HOB_EA`) is indicated as `<HOBEADIR>`.
3. Copy the installation file `HOB_EA.hobea.zip` to `<HOBEADIR>`, e.g. by means of FTP.
4. On the OS/400 system run the QShell by entering the command `STRQSH`
5. In the QShell command line switch to `<HOBEADIR>`.
6. In the QShell unzip the ZIP file, .e.g. by entering the following command:
   ```
   jar -xvf hobea.zip
   ```

1.1.8.1 Configuring the HTTP Server

1. Apply web sharing to `<HOBEADIR>/www` and `<HOBEADIR>/portal.db`. For instance use the virtual directory names "HOB_EA" and "portal.db". In the QShell enter the following command:
   ```
   chmod -R 775 www
   chmod -R 775 portal.db
   ```
2. In the command line of the OS/400 system make `<HOBEADIR>` available to the HTTP system profile by entering the following commands:
   ```
   CHGAUT OBJ('/<HOBEADIR>') USER(QTMHHTTP) DTAAUT(*RX)
   CHGAUT OBJ('/<HOBEADIR>/*') USER(QTMHHTTP) DTAAUT(*RX)
   ```

This procedure can also be executed via a browser:

1. Launch AdminServer by means of `STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)`
2. Specify the browser URL `http://<IPOS400>:2001` in the configuration menu. Replace the variable `<IPOS400>` with a valid URL, which specifies the IP address of the OS/400 system, e.g. `os400.hob.de`

If the HOB EA application is to be run as a separate instance, you must first create a new configuration and then a new instance. Otherwise, you can also use an existing configuration.

1. In the configuration specify the port for the Server instance and specify the default page, e.g. `default.html`.

2. Assign the Web Server directories to the users.
3. In the Configuration menu>Request Processing>Request Routing enter the following commands:
   ```
   Pass /portal.db/* /<HOBEADIR>/portal.db/*
   Pass /HOB_EA/* /<HOBEADIR>/www/*
   ```

   Sample for the command line with the WRKHTTPCFG command:
   ```
   Welcome default.html
   HostName <IPOS400>
   Port 80
   Enable                      GET
   Enable                      HEAD
   AddType .class application/octet-stream binary 1.0
   DirAccess                  On
   AlwaysWelcome On
   Pass /portal.db/* /<HOBEADIR>/portal.db/*
   Pass /jterm/* /<HOBEADIR>/www/*
   ```

   Replace the variable <IPOS400> with a valid URL, which specifies the IP address of the OS/400 system, e.g. os400.hob.de

   The configuration shown is only a sample. Pass and Mapping directives must be customized according to your demands. In the aforementioned sample you launch the default page of HOBLink J-Term by entering the URL http://os400.hob.de/HOB_EA/.

1.1.8.2 Registering HOB EA Applications on an OS/400

In the following instructions the HOB Enterprise Access installation directory is indicated as <HOBEADIR>.

1. Register the HOB EA application in a Java command line of the QShell. Switch to the following directory:
   <HOBEADIR>/www/lib
2. Run the JAVA-Tool jpkeyc by entering the following commands:
   ```
   java -classpath /<HOBEADIR>/www/lib/jpkeyc.jar:. hob.tools.jpkey.jpkeyc
   -a/<HOBEADIR>/www/lib -s<SERIALNO> -k<PRODKEY> -crel57.gif
   ```

   Replace the following variables:
   <HOBEADIR> with the installation directory /QOpenSys/HOB_EA
   <SERIALNO> with the first part of the product key
   <PRODKEY> with the second part of the product key
3. If your product key for instance is 1234-5678 and your installation directory is /QOpenSys/HOB_EA, the command is as follows:
   ```
   java -classpath /QOpenSys/HOB_EA/www/lib/jpkeyc.jar:.
   hob.tools.jpkey.jpkeyc -a/usr/HOB_EA/www/lib -s1234 -k5678 -crel57.gif
   ```
4. The HOB EA application has been successfully registered once the Java Tool displays a corresponding message.

1.1.8.3 Registering the HOB EA application as a Tryout Version on an OS/400 System

In the following instructions the HOB Enterprise Access installation directory is indicated as <HOBEADIR>.

1. Register the HOB EA application in a Java command line of the QShell. Switch to the following directory:
   <HOBEADIR>/www/lib
2. Run the JAVA-Tool jpkeyc by entering the following commands:
   `java -classpath /<HOBEADIR>/www/lib/jpkeyc.jar:. hob.tools.jpkey.jpkeyc -a/<HOBEADIR>/www/lib -s0 -crel57.gif`

   Replace the variable <HOBEADIR> with the installation directory /QOpenSys/HOB_EA
3. The HOB EA application has been successfully registered once the Java Tool displays a corresponding message.

1.1.9 How to Install HOB EA Applications on Operating Systems without a GUI

1. Install **HOBLink J-Term 3.x** from the HOB Enterprise Access CD.
   Use the following parameter when launching the installation for the respective operating system:
   `-i console`
2. In the course of the installation select "Enterprise Model" to include HOB Enterprise Access in the installation procedure.
3. Apply web sharing to the directory `..\www`, e.g. with the virtual directory name HOB_EA.

For information on how to run HOB EA applications with WebProfile, please refer to the relevant online help.

Continue by registering the HOB EA application via one of the two procedures described in the following. After registering the HOB EA application, the installation is completed.

1.1.9.1 Registering the HOB EA Application on Systems without a GUI

In the following instructions the HOB Enterprise Access installation directory is indicated as <HOBEADIR>.

1. Open the console window and switch to the following directory:
   <HOBEADIR>/www/lib
2. Run the JAVA-Tool jpkeyc by entering the following commands:
   `jre -cp jpkeyc.jar hob.tools.jpkey.jpkeyc -a<HOBEADIR>/www/lib -s<SERIALNO> -k<PRODKEY> -crel57.gif`

   Replace the following variables:
   <HOBEADIR> with the installation directory /usr/HOB_EA
   <SERIALNO> with the first part of the product key
   <PRODKEY> with the second part of the product key
3. If your product key, for instance, is 1234-5678 and your installation directory is /usr/HOB_EA, the command is as follows:

```
jre -cp jpkeyc.jar hob.tools.jpkey.jpkeyc -a/usr/HOB_EA/www/lib -s1234 -
k5678 -crel57.gif
```

4. The HOB EA application has been successfully registered once the Java Tool displays a corresponding message.

1.1.9.2 Registering HOB EA Applications as a Tryout Version on Systems without a GUI

In the following instructions the HOB Enterprise Access installation directory is indicated as <HOBEADIR>.

1. Open the console window and switch to the following directory:
   <HOBEADIR>/www/lib
2. Run the JAVA-Tool jpkeyc by entering the following commands:
   `jre -cp jpkeyc.jar hob.tools.jpkey.jpkeyc -a<HOBEADIR>/www/lib -s0 -crel57.gif`

   Replace the variable <HOBEADIR> with the valid installation directory /usr/HOB_EA
3. The HOB EA application has been successfully registered once the Java Tool displays a corresponding message.

1.1.10 How to Install HOB EA Applications on z/OS Systems

In the following instructions, the installation directory /usr/HOB_EA is indicated as <HOBEADIR>.

1. Create a new directory, e.g. /usr/HOB_EA.
2. Copy the installation file hobea.zip to <HOBEADIR>, e.g. by means of FTP.
3. Unzip the ZIP file, e.g. by entering the command:"jar -xvf hobea.zip".
4. In the specified directory check the parameters set for the following file of the IBM HTTP Server:
   /httpd.conf
5. If the default parameters "AddType .html ...ebcdic" are set, continue as follows:
   Copy the files from the subdirectory <HOBEADIR>/ebcdic/www to the directory <HOBEADIR>/www by keeping their original directory structure. These directories contain the HTML pages converted to EBCDIC format, as required by the configuration of the IBM HTTP Server.
   If the parameter settings in the file httpd.conf are "AddType .html ...binary", the procedure described for the conversion in the previous paragraph does not apply.

1.1.10.1 Configuring the WWW Server

The WWW Server documentation features detailed instructions on web sharing.

Apply web sharing for the directory <HOBEADIR>/www. For example, use the virtual directory name HOB_EA.

If you want to use the WebProfile configuration model, also apply web sharing for the directory <HOBEADIR>/portal.db. Use portal.db as virtual directory name.

Continue with the registration of the HOB EA application by executing either of the two procedures described in the following. After registering the HOB EA application the installation is completed.

1.1.10.2 Registering HOB EA Applications on a z/OS System

1. Open the file <HOBEADIR>/scripts/OS390/LicenseJTerm with any editor.
2. This file uses the following variables that must be replaced as follows:
   <HOBEADIR> with the installation directory of HOB Enterprise Access or the HOB EA applications
   <SERIALNO> with the first part of the product key
   <PRODKEY> with the second part of the product key
3. In order to execute this file, you must modify its file attributes by entering the following command:
   `chmod uog+x LicenseJTerm`
4. Run the script file
   <HOBEADIR>/scripts/OS390/LicenseJTerm.
5. The HOB EA application has been successfully registered once the Java Tool displays a corresponding message.

1.1.10.3 Registering HOB EA Applications as a Tryout Version on a z/OS System

1. Open the file <HOBEADIR>/scripts/OS390/TryoutJTerm with any editor.
2. This file uses a variable that must be edited as follows:
   Replace <HOBEADIR> with the installation directory of HOB Enterprise Access or the HOB EA applications
3. In order to execute this file, you must modify its file attributes by entering the following command:
   `chmod uog+x LicenseJTerm`
4. Run the script file
   <HOBEADIR>/scripts/OS390/TryoutJTerm
5. The HOB EA application has been successfully registered once the Java Tool displays a corresponding message.

2. HOB Enterprise Access Components

HOB Enterprise Access consists of two major basic components: The server component, which is comprised of further components that are installed exclusively on the server, and the client component, which is the respective HOB EA application running under HOB Enterprise Access. The HOB EA application is configured and administrated using the HOB EA Administration tool.

2.1 HOB EA Server

2.1.1 Definition

The EA Server executes the following tasks:

- Administrating the data base `portal.db` containing all user related settings
- Verifying user rights
- Providing the respective user settings for each HOB EA application

2.1.2 EA Server Function

The EA Server responds to TCP/IP connections established by the HOB EA application. TCP/IP connections can be achieved via two ports, depending on the connection type used:

- Port 13270 (default) for conventional connections
- Port 13271 (default) for secure SSL connections

The connections between the EA Clients and the EA Server are not permanent, since a huge number of clients would drastically increase the use of system resources. Once a client has been launched, a connection to the EA Server is established for a certain period (this period can be configured by means of HOB EA Administration>**Utilities** menu>**Configure HOB EA Server...**>**Connection** tab>**Timeout**). After the specified time has elapsed, the connection will be automatically terminated. If the EA Server is re-accessed later on (e.g. to save user settings), the connection will be automatically restored (imperceptible for the user).

2.1.3 How to Configure the EA Server

1. Select **HOB EA Administration** in the **HOB Enterprise Access** folder.
2. Select the **Utilities** menu>**Configure EA Server...**>**Properties** or **Connection** tab.

2.1.4 Logging on to the HOB EA Server

In order to log on to the EA Server you must first start the EA Server.

The required pre-settings for the first connection to the database for the HOB EA Server are defined in the `startup.hxml` file of the installed HOB EA application, stored in the following subdirectory:

```
<installation directory>/www/lib/hob/props/
```

Use the HOB EA Administration tool to edit this file.

2.1.4.1 How to Launch the EA Server Under Windows NT / 2000

For this operating system EA Server is installed as system service.

- The items "Start HOB EA Server" and "Stop HOB EA Server" are available in the folder **HOB Enterprise Access** to execute the corresponding action.

In order to launch the service automatically when booting the system, you can change the start-up mode from "Manually" to "Automatically."

- Use the Control Panel to enable the startup mode "Automatically" for the service "HOB EA Server."

2.1.4.2 How to Launch the EA Server on OS/400 Systems

In order to launch the EA Server use the following Java command in the QShell. To make the launching procedure easier we recommend writing a CL application.

Sample:

```
PGM
MONMSG MSGID(JVA0122)
MONMSG MSGID(JVAB53B)
RUNJVA CLASS(hob.hlc.srv.EntprServer) PARM('-p/<HOBEADIR>') +
/<HOBEADIR>/www/lib/HOBssl.jar:+
/<HOBEADIR>/www/lib/activation.jar:+
/<HOBEADIR>/www/lib/mail.jar:+
/<HOBEADIR>/www/lib/jndi/ldapbp.jar')
ENDPGM
```

Replace the variable <HOBEADIR> with the installation path of HOB Enterprise Access or the HOB EA application (whatever applies).

This step completes the installation. You can now continue with configuring a user database using the HOB EA Administration tool.

2.1.4.3 How to Launch the EA Server on z/OS Systems

1. Open the file <HOBEADIR>/scripts/OS390/RunEAServer by means of any editor.
2. This file uses the variable <HOBEADIR> that must be replaced by the installation directory of HOB Enterprise Access or the HOB EA application (whatever applies).
3. In order to execute this file, you must modify its file attributes by entering the following command.
   `hmod uog+x RunEAServer`
4. Launch EA Server either by means of...
   a. the following script file
   <HOBEADIR>/scripts/OS390/RunEAServer

   or

   b. a Started Task, as described several lines down under the link "How to launch the EA Server on an z/OS system as Started Task."

This step completes the installation. You can now continue with configuring a user database using the HOB EA Administration tool.

2.1.4.4 How to Launch the EA Server on z/OS Systems as a Started Task

If a Started Task has been set up, it can automatically be launched once the system has been booted.

The name of a Started Task must be defined in RACF as a user of the OMVS Segment (data set name). The following examples uses HENTPR as the name of the Started Task.

Use the following command to launch HOB Enterprise Access under z/OS from the console.

```
//HENTPR PROC
//ENTPR  EXEC  PGM=BPXBATCH
//STDIN   DD PATH='/<HOBEADIR>/scripts/
//        OS390/RunEAServer',PATHOPTS=(ORDONLY)
//STDOUT  DD PATH='/tmp/hentpr.out',PATHOPTS=(OWRONLY,OCREAT),
//        PATHMODE=SIRWXU
//STDERR  DD PATH='/tmp/hentpr.err',PATHOPTS=(OWRONLY,OCREAT),
//        PATHMODE=SIRWXU
```

Replace the variable <HOBEADIR> with the installation path of HOB Enterprise Access or the HOB EA application (whichever applies).

The output created by HENTPR as well as error messages can be redirected to the OMVS sets. If error messages occur, they can be viewed directly in the data set for error diagnosing purposes.

This step completes the installation. You can now continue with configuring a user database using the HOB EA Administration tool.

2.1.4.5 How to Launch the EA Server on Other Operating Systems

- Run the executable file EAServer in the installation directory.

This step completes the installation. You can now continue with configuring a user database using the HOB EA Administration tool.

2.1.4.6 Log File Entries

All actions performed by the EA Server are recorded and saved to a log file. These entries are written to the following subdirectory: / file /portal.db/logPortal.txt of the installation directory.

2.1.4.7 How to Determine the Log File Settings

1. Run **HOB EA Administration** from the **HOB Enterprise Access** folder.
2. Select **EA Server** menu>**Log file...**>**OK** button>**Options** menu>**Configure log file...**.

2.1.4.8 How to View the Log File

1. Run **HOB EA Administration** from the **HOB Enterprise Access** folder.

2. Select **EA Server** menu>**Log file...**.

2.2 HOB Proxy Server

You can use the Proxy Server for TCP/IP redirection to increase the data security of your organization. Setting up a Proxy Server is urgently recommended if you communicate with a host that does not support SSL.

You can use the Proxy Server, for example, with our HOBLink Secure software (subject to additional costs) to achieve strong encryption for applications that do not support SSL at all or only offer weak encryption. The Proxy Server is the mediator between the application and the insecure data channel you want to use to communicate with your partners.

The Proxy Server acts as a transparent TCP/IP Server, which connects to other servers via the ports that are assigned to it. Each defined server has ports that can be configured individually. Instead of direct connections to the destination server, the connections are re-routed to the Proxy Server and the local ports. The Proxy Server assigns the number of the local port to the destination host port and thus establishes the connection. In any case, for security reasons you should avoid direct access to the host via the virtual host port (e.g. port 23). This goal can be easily achieved by coupling the Proxy Server with a firewall. If a DMZ (**D**e**m**ilitarized **Z**one) is set up, this is the ideal place to deploy the Proxy Server with maximum efficiency.

In this case, the installed HOB EA application (client) can attach to the host via the Proxy Server. This scenario is represented by the following graphic:

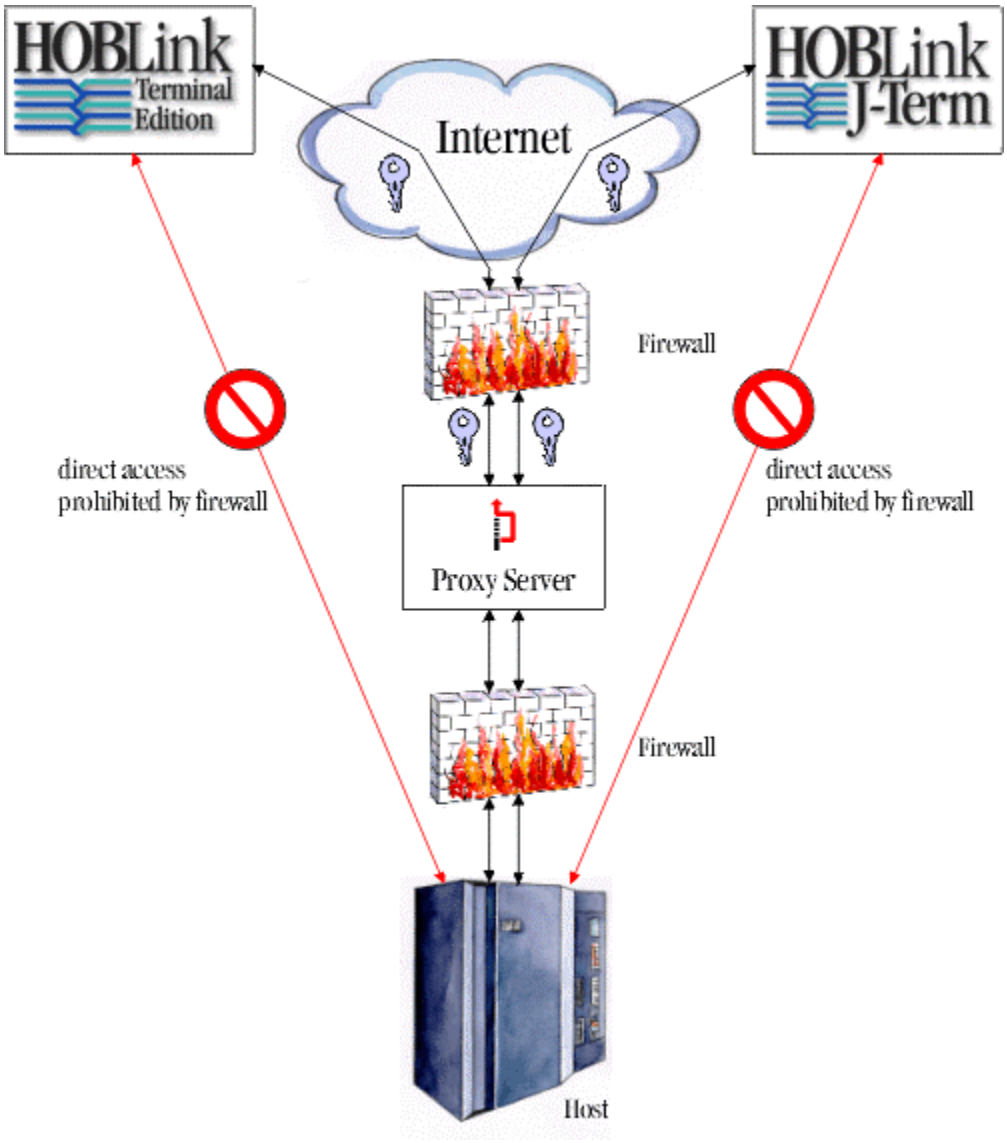

fig. 7: Basic functions of the Proxy Server

Our HOBLink Secure product (subject to additional costs) provides HOBLink SSL Proxy, a Windows based TCP/IP redirector, which you can use alternatively. It even beats the HOB Enterprise Proxy Server, subject to Java restrictions, in terms of performance and speed (about 20%)!

Compared to the Windows based HOBLink SSL Proxy, which is part of HOBLink Secure, the Java based Proxy Server, however, supports FTP protocol with SSL.

2.2.1 How to Run the Proxy Server Under Windows NT / 2000

For this operating system the Proxy Server is installed as a system service.

- The items "Start HOB Proxy Server" and "Stop HOB Proxy Server" are available in the folder **HOB Enterprise Access** to execute the corresponding action.

In order to launch the service automatically when booting the system, you can change the startup mode from "Manually" to "Automatically."

- Use the Control Panel to enable the startup mode "Automatically" for the service "HOB Proxy Server."

2.2.2 How to Run the Proxy Server on OS/400 Systems

Example:

```
PGM
MONMSG MSGID(JVA0122)
MONMSG MSGID(JVAB53B)
RUNJVA CLASS(hob.proxy.ProxyServer) PARM('-p/<HOBEADIR>' +
'-sproxysu.hxml' '-a<IPOS400>') +
CLASSPATH('/<HOBEADIR>/www/lib:+
/<HOBEADIR>/www/lib/activation.jar:+
/<HOBEADIR>/www/lib/mail.jar:+
/<HOBEADIR>/www/lib/HOBssl.jar')
ENDPGM
```

Replace the variable <HOBEADIR> with the installation path of HOB Enterprise Access or the HOB EA application (whatever applies).

2.2.3 How to Run the Proxy Server on z/OS Systems

1. Open the file <HOBEADIR>/scripts/OS390/runProxyServer by means of any editor.
2. This file uses variables that must be replaced by following:
   <HOBEADIR> with the installations path of HOB Enterprise Access or the HOB EA application (whatever applies).
   <SERVINET> by the Internet address of your Server, e.g. myserver.mydomain.com.
3. In order to execute this file, you must modify its file attributes by entering the following command.
   `chmod uog+x runProxyServer`
4. Launch EA Server either by means of...
   a. the following script file
   <HOBEADIR>/scripts/OS390/runProxyServer

   or
   b. a Started Task, as described several lines down under the link "How to launch the EA Server on an z/OS system as Started Task."

2.2.4 How to Run the Proxy Server on z/OS Systems as a Started Task

If a Started Task has been set up, it can be launched automatically once the system has been booted.

The name of a Started Task must be defined in RACF as a user of the OMVS Segment (data set name). The following example uses HPROXY as the name of the Started Task.

Use the following command to launch the Proxy Server under z/OS from the console.

```
//HPROXY  PROC
//PROXY   EXEC  PGM=BPXBATCH,REGION=6M
//STDIN   DDPATH='/<HOBEADIR>/scripts/
```

```
//             OS390/runProxyServer',PATHOPTS=(ORDONLY)
//STDOUT  DDPATH='/tmp/proxy.out',PATHOPTS=(OWRONLY,OCREAT),
//        PATHMODE=SIRWXU
//STDERR  DDPATH='/tmp/proxy.err',PATHOPTS=(OWRONLY,OCREAT),
//        PATHMODE=SIRWXU
```

Replace the variable <HOBEADIR> with the installation path of HOB Enterprise Access or the HOB Enterprise Access application (whatever applies).

The output created by HPROXY as well as error messages can be redirected to the OMVS sets. If error messages occur, they can be viewed directly in the data set for error diagnostic purposes.

2.2.5 How to Run the Proxy Server on Other Operating Systems

- Run the executable file ProxyServer in the installation directory.

2.2.6 Proxy Server Settings

When the Proxy Server is launched, it always uses the startup options defined in the file proxysu.hxml in the following subdirectory of the installation path:

```
<installation directory>/www/lib/hob/props/
```

The following parameter is specified as default for the Proxy Server, so the aforementioned file is used on launching the Proxy Server, e.g.

```
\lib\hob.proxy.ProxyServer -sproxysu.hxml
```

You can also use customized HXML files with alternative options. Simply specify the desired file name instead of the specified file proxysu.hxml. If blanks are used within the file name you must put the entire parameter in quotation marks, e.g. "-suserdefined settings.hxml".

2.3 Client Component

The client component is the respective HOB EA application being used in conjunction with HOB Enterprise Access. It is recommended to use the **HOB EA Administration** tool to configure and administrate the HOB EA applications. The HOB EA applications are:

- **HOBLink J-Term**

This product supplies emulations which can be optionally run as guified versions.

Users are identified by user name and password or by the IP address.

The emulations are accessible via the user settings. These may or may not be editable by the user depending on the user rights configured for that respective user.

- **HOBLink JWT EA / UWT EA**

Java client that connects any platform (Windows, UNIX, Macintosh, NC, OS/2 and Handheld PCs) with Microsoft Windows Terminal Servers.

HOBLink UWT is a Native Client that connects Linux systems with Microsoft Windows Terminal Servers.

Users are identified by user name and password or by the IP address.

Both clients are accessible via the user settings. These may or may not be editable by the user depending on the user rights configured for that respective user.

- **HOBLink VPN**

A Virtual Private Network security solution providing IPSec and SSL security, with a universal gateway and client design, firewall functions, strong authentication and more.

2.4 HOB Enterprise Access Administration

HOB EA Administration is a Java-based application. This tool is used for:

- Configuring the HOB EA Server, which administrates the user settings in a database
- Creating and administrating users, groups, containers and their properties
- Configuring the HOB EA applications
- Determining the startup options, which provide basic settings for logging on to the data base and the connection to the EA Server
- Issuing user rights
- Setting up filters, which, for instance, prevent the user from executing a specific action, e.g. menu commands

HOB EA Administration can be installed together with HOB Enterprise Access, and allows you to create a database for your organization which serves as the basis for the configuration of HOB software products.

This database is displayed in a tree structure and looks similar to the following illustration:

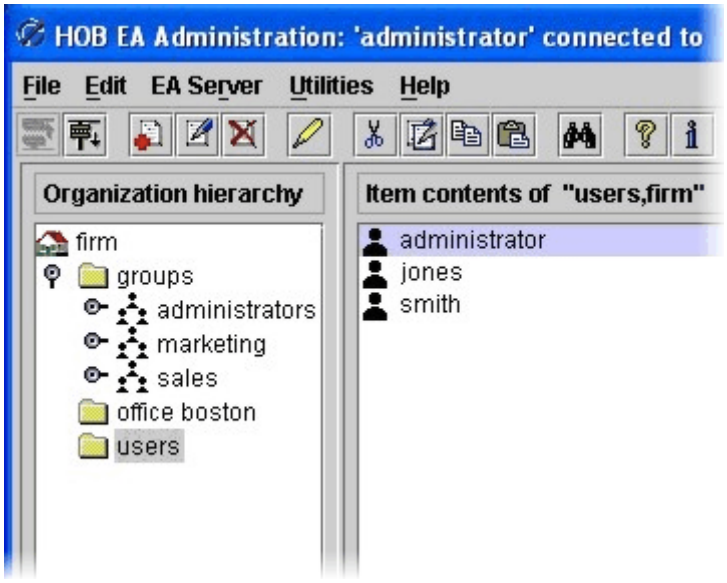

fig. 6: Structure as sample for a database created by means of HOB EA Administration

The following elements can be added to the tree structure:

- **Firm**
  This is the root element and it represents your organization. It is already part of the database when you run HOB EA Administration for the first time and cannot be created by the user or administrator. The root element is the basis of the database. It takes the first position in the tree structure — all other elements are on sublevels.
  You can customize the name of the root element and, for example, replace it with your organization's name. This also requires changing the default user context to match the root element.

- **Container**
  Containers are abstract elements. They are meant to be "organizational units," making it possible to keep the tree structure clear. Therefore, do not use containers to reflect real persons. Containers can be expanded. They can accommodate other elements on sublevels, which in turn may be either groups or containers.

- **Object**
  Objects are abstract elements. Do not use objects to reflect real persons. Practical examples for using objects are to define gateways or proxies.
  Objects represent the lowest level of the tree. Objects cannot be expanded or enhanced. Therefore, they cannot accommodate other elements on sublevels the way containers do.

- **Group**
  Use this element to represent departments.
  Groups cannot be expanded or enhanced. Therefore, they cannot accommodate other elements on sublevels the way containers do.
  However you can assign existing users in the tree to groups as members and thus "bundle" them. This is not achieved by physically adding elements to them, but simply by configuring either group or user properties accordingly.

- **User**
  Use this element to represent real persons.
  Users represent the lowest level of the tree. Users cannot be expanded or enhanced. Therefore they cannot accommodate other elements on sublevels the way containers do. However, you can organize existing users in groups. This is not achieved by physically adding elements to them, but simply by configuring either user or group properties accordingly.

In light of the aforementioned restrictions for certain elements, we recommend creating groups to represent departments and users to represent their staff. By linking groups and users by means of their "membership" property (**Properties** button>**Member / Member of** tab), changes within a group can be made easily and quickly. With only a few mouse clicks you can remove a member from one or more groups and assign it to other groups.

If, on the other hand, you create objects to represents users, you must create a corresponding object in each group that the user is going to be a member of. To delete the user from groups, you must remove the corresponding object in each group that the user is going to be removed from. The administration work involved is significantly higher than that for the linking method of assigning users to groups as members.

Also consider how elements are affected by changing the method of inheritance. The best method is to "bundle" employees with equivalent responsibilities and authorization profiles to a corresponding number of groups. Select the inheritance method "by group membership." Use HOB EA Administration to configure the desired HOB EA application for the respective group. Through the membership of users in groups, the respective settings

and rights are inherited by users within the group. This way you can quickly react to internal staff changes and assign users to other groups. The other way around, you also control rights that are issued to the user.

2.4.1 Installing HOB EA Administration

After installing HOB Enterprise Access, the HOB EA Administration tool is only available on the computer on which you have run the installation. To be able to access this tool from any workstation in your network, we offer the following options:

2.4.1.1 How to Install HOB EA Administration on Client PC's

This alternative allows you to install HOB EA Administration on selected computers.

1. Insert HOB Enterprise Access CD in appropriate drive.
2. Install **HOB EA Administration** on the Client PC from which you want to run the tool.

2.4.1.2 How to Make HOB Enterprise Access Installation files Available on the Web Server

Recommended method if you want to run the installation on a large number of computers.

1. Copy the contents of the directory `/english/prtladmin/` from the HOB Enterprise Access CD into an individual directory on the Web Server, for instance, `/download`.
2. Apply web sharing for the `/download` directory.
3. Launch the browser on the computer where you want to install HOB EA Administration.
   Enter the following URL in the URL edit bar of the browser:
   `<Server IP address>/download/install.htm`
4. Run the installation according to the instructions given on the screen.

2.4.1.3 Inheriting User Rights

One major issue in configuring HOB EA applications is deciding to whom which user rights may be granted. These user rights determine the scope a user has in working with the applications.

In this context, we would like to provide some basic information. As mentioned earlier, the database, which you can create using HOB EA Administration, has the structure of a tree.

The inheritance of user rights, which you can issue on a product and element related basis, is founded on two major principles:

1. Inheritance by Tree (Hierarchy Principle)

Elements are organized in a hierarchy which branches downward into several sublevels. The elements within one level inherit the user rights of the level one step higher. Depending on the configuration, user settings stored in schemes as well as even entire session configurations, for example, can be inherited by users. This applies to all levels, all the way back to the root element. In other words, all user rights available on one level are inherited by the next sublevel, and so on.

2. Inheritance by Group Membership (Linear Principle)

Groups grant user rights automatically to the users assigned to them. Depending on the configuration, user settings stored in schemes as well as even entire session configurations, for example, can be inherited by users. With regard to inheritance, groups and users can be understood as interactive units.

If a user is a member in several groups at the same time, the sum of user rights is inherited by all users in the groups that the user is a member of. In concrete terms, if a user right (C) has been issued to a user as a member of group A, and that user right has not been granted to him as a member of group B, then this right is automatically issued to him in both groups.

Consider these inheriting mechanisms when granting the rights and keep them in mind when creating new items and/or levels.!

If you remove certain rights on a higher level, this will immediately affect all subordinate levels as well as removing rights from certain groups will immediately affect its members.
In **HOB EA Administration** select **Utilities** menu>**Configure HOB EA Server...**>**Properties** tab **>Method of inheritance** to select the desired method.

You can also assign application-related user rights to elements in the database (**HOB EA Administration**>select database element>select the HOB EA application in the list box on the right bottom>select **Configure** button>**User Rights** tab).

2.4.2 Startup Options

Select **Utilities** menu>**Startup options...** in the **HOB EA Administration** tool to change the default startup options stored in the `startup.hxml` file or other custom HXML files. These files may either be stored at any location or directly on the EA Server
The menu item **Startup options...** launches the Startup Options Manager, with which you can fine tune the startup options. These determine which settings will be used to launch a HOB EA application and which Connection Model will be used to make the connection.
The startup options provide a vast range of controlling mechanisms for the user logon, ranging from restricted to loose handling. The user logon may either be conducted completely unnoticed by the user by immediately launching the respective application. On the other hand you can give more rights to experienced users, for instance to logon with different user names or with alternative logon options.

Moreover the Startup Options Manager allows you to create HTML pages to be opened by means of a browser in order to run an applet. A variety of options provide sufficient flexibility to conduct this task the way you want it.

2.4.3 Importing Users

Select **Utilities** menu>**Import...** in the **HOB EA Administration** tool, which provides two methods of importing users to the database.

1. Importing from file

Imports user data from a default text file.

Each line must provide user name, group and password (optional). The data can either be tab stop separated or semicolon separated. In the following dialogs select the import file and the destination elements in the tree, where the data is to be inserted.

The installation directory contains the sample file `ImportUsers.txt`, which provides further details.

2. Importing with LDAP

Imports user data from an LDAP Server database.

3. HOBLink J-Term

3.1 Welcome to HOBLink J-Term

HOBLink J-Term is the solution for EA Connectivity via the Internet, providing you with terminal emulations for 3270, 5250, VT, HP700, Siemens 9750 (BS2000) and SINIX 97801 (Siemens) in Java, in one single application. HOBLink J-Term can be run on any computer on which a Java Virtual Machine is installed that supports JDK 1.1.7, e.g., on a PC with a web browser or on a network client. HOBLink J-Term is a certified Java solution.

3.2 HOBLink J-Term Session Manager

The Session Manager is the control center for all sessions. The Session Manager provides a clear overview of all available sessions.

Provided that your system administrator has granted you the required user rights (only applicable when installed with HOB Enterprise Access), you can carry out the following procedures relevant to HOBLink sessions:

3.2.1 Options

Folder

Shows the name of the currently selected folder or \, if you are in the root of the Session Manager.

BY pressing you can move up one level, if you are currently within a folder. This button has no effect if you are in the root (the folder field displays \).

The Session Manager provides several ways of displaying folders to arrange and identify them. Press to select one of the following display formats:

- **Large Icons**

Shows Session / Folder names using large icons, arranged in rows from left to right.

- **Small Icons**

Shows Session / Folder names using small icons, arranged in rows from left to right.

- **List**

Shows Session / Folder names in list format, displaying small icons in front. The entries are arranged in columns from top to bottom.

- **Details**

Shows Session / Folder names in list format, displaying large icons in front. The entries are arranged in columns from top to bottom. They also provide enhanced information such as Name, Type, State and Owner.

Run

Runs the currently selected session(s).

Close

Closes the currently selected session(s).

New...

Creates a new session in the Session Manager.

Clone

Adds copies of one or more currently selected sessions.

(See SectionXXX, below, for more detailed information on cloning sessions.)

Edit...

Edit and modify schemes in the Session Editor, in which the session-specific settings are saved

Schemes are used to store session specific settings.

Edit All...

Modifies schemes for all session in Session Editor. This button is available only when at least two sessions in the window are selected (multiple selection by pressing [Ctrl] in addition).

You can also use this button to group folders logically.

Delete

Removes currently selected session(s) from the list.

3.2.2 Cloning Sessions

1. Start the Session Manager.

Select name of the desired session.
To select multiple sessions simultaneously click and hold down [Ctrl] and then click the desired sessions.

This function is only available, provided that your system administrator has granted you the required user rights (only applicable for the installation of HOB Enterprise Access).

2. Click Clone button.

A cloned session can be only distinguished from its original by the name, which consists of the prefix `Copy of` and the original session name, i.e. `Copy of Session 1`, if `Session 1` is the original session name.

For more detailed information, please see the corresponding J-Term online help item.

3.3 HOBLink J-Term Session Editor

Provided that your system administrator has granted you the required user rights (only applicable for the installation of HOB Enterprise Access), you can edit the settings of a scheme in the tabs shown on the right.

All modifications in a scheme are incorporated and saved when the Session Editor is closed.

The affiliated schemes of either a display session or a printer session are displayed in the left pane in a tree structure on multiple levels. It is necessary to open a particular level to view its contents.

3.3.1 Options

New

Creates a new scheme for the selected scheme type. You can modify the settings for this scheme in the tab card in the right pane.

The button is disabled if your system administrator has not granted you rights to this process (only applicable for the installation of HOB Enterprise Access).

Delete

Deletes the scheme that is highlighted in the sublevel of a scheme type.

The button is disabled if your system administrator has not granted you rights to this process (only applicable for the installation of HOB Enterprise Access).

Set

When more than one scheme of this scheme type is displayed in the left pane of the tree view, this activates the scheme to be used for the connection setup. The scheme to be used appears bold.

You may choose only one scheme for each scheme type as the active scheme.

Undo

Cancels all current modifications that have been made in the tab card for the displayed scheme. This action is no longer possible as soon as you select another scheme, since this action saves the changes in the first scheme.

Default

Restores the default settings for the selected scheme.

Close

Closes the Session Editor and applies all modifications of the schemes.

3.3.2 Display Session

If a session is defined as a display session, you can use it on a PC to start host applications and take advantage of all the functions of a terminal.

The OIA (Operator Information Area) appears and shows the current connection status. To obtain detailed information about the connection, please refer to the online help.

3.3.3 Printer Session

If a session is defined as a printer session, you can use a PC printer as a host printer.

The OIA also appears here (as in the display session) and shows the current connection status. To get detailed information about the connection, please refer to the online help.

3.3.4 User Defined Options

You can enter any of the listed functions in the **User Defined Options** tab found in the **Others** scheme.

Here you have the option of making other settings for the HOB EA application that were not covered in the dialogs provided.

3.3.5 Print Parameters for HOBLink J-Term

Option	Value
HMI	[Integer] Default: 0 HMI (Horizontal Motion Index) determines the spacing between characters in the line. Positive values increase spacing, negative values decrease spacing.
VMI	[Integer] Default: 0 VMI (Vertical Motion Index) determines the spacing between the lines. Positive values increase spacing, negative values decrease spacing.
SKIP	[Integer] Default: 0 Suppresses the specified number of leading zeros in the line.
SKIPLINES	[Integer] Default: 0 Suppresses the specified number of leading lines in the data stream.
ITC	[Hex value] e.g. 0x0D ITC (Ignore Trailing Character) suppresses trailing characters specified by the hex value in the data stream. Only for Escape print.
IGNORE_FF_TRN	YES / NO (default) YES suppresses formfeed in the transparent data stream. Only for Escape print.
AUTO_ORIENT	YES (default) / NO NO disabled the automatic paper orientation for 5250 print.
DRAWER	[Integer] Default: 0 Selects the specified paper tray of the printer.
NATPRT	YES (default) / NO NO disables native print and uses JAVA for printing. Only for Escape print.
INIT_EVERY_JOB	YES / NO (default) YES sends the init sequences with every print job. Only for Escape print.

PRT_SHF_CPI	YES / NO (Standard) YES customizes the CPI when retaining the SHF command (Set Horizontal Format), depending on which page width is requested by the SHF command. If e.g. the SHF command sets 132 characters per line, CPI is modified to 17 CPI so that 132 characters will fit the line.

3.3.6 Map Displayable Attributes

You can customize the displayable attributes of the session window to make it match your demands.

The following table shows the assignment of attributes and their positions. Since attributes must be entered as hex values in the **User-defined Options** tab, you must convert them to their hex value. If you combine multiple attributes, you must add their hex values.

Attribute	**Position**
Foreground color Blue	0 (Least Significant Bit)
Foreground color Red	1
Foreground color Green	2
APL (not editable)	3
Reverse	4
Underscore	5
Blink	6
Column Separator	7
Bold	8
Background color Blue	9
Background color Red	10
Background color Green	11 (Most Significant Bit)

In the following example the hex value for the attributes "Foreground color Red" and "Blink" is 042:

Position	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Bit	0	0	0	0	0	1	0	0	0	0	1	0
Attribute						BLINK					FG RED	
Hex value	0				4				2			

The mapping of attributes requires the following information:

1. The current value, specifying one or more attributes.
2. A filter that determines the attributes to be compared.
3. The target value, specifying the result of the attribute mapping.

3.3.6.1 Mapping Attributes

1. Enter the following in the **Option** field to map the desired attribute (**Option** column in the following table). Start off with the parameter MAP_ATTR0.
   The attributes must be numbered in ascending order. You can enter a maximum of 16 attribute mappings (MAP_ATTR0 ... MAP_ATTR15.
2. Enter the following information as hex values in the **Value** field (**Value** column in the following table), which must be separated from each other by semicolons. The respective hex value must be converted according to the above tables:
   - the current value of the attribute(s).
   - the filter, determining, which attribute(s) is (are) to be changed.
   - the target attribute value, specifying the result of the mapping.
   - the filter, determining which attribute(s) will be overwritten. All others remain unchanged.

Examples:

To convert the attributes "Blink" to the attributes "Background color White" and "Foreground color Blue" enter the following and click on the **Add** button:

Option	Value
MAP_ATTR0	040;040;E01;E07

To convert the foreground color yellow to the attribute "Foreground color Red" enter the following and click on the **Add** button:

Option	Value
MAP_ATTR1	005;007;002;007

3.3.6.2 Enable Host Code Page 850 for VT Session

By default VT sessions use Host Code Page 819.

To make VT sessions use Host Code Page 850 permanently enter the following and click on the **Add** button:

Option	Value
char850	Y N disables Host Code Page 850 and enables Host Code Page 819.

3.3.6.3 Disabled Enhanced Non-Programmable User Interface for HOBLink 5250n

By default this function is enabled, i.e., GUI objects such as checkboxes, scrollbars, etc., are displayed on the screen.

To display GUI objects as plain text, enter the following and click on the **Add** button:

Option	Value
enptui	N disables displaying GUI objects on the screen.

3.3.7 Schemes

HOB EA applications use schemes in which the specific settings of each session are saved. Settings are grouped logically and assigned to a certain scheme which is displayed in the tree structure of the Session Editor.

Applies to HOBLink J-Term only:
Display and printer session use identical schemes in many cases, but also necessarily include schemes to accommodate settings that are specific to that type of session.

As long as no schemes have been created, you can also obtain information about the scheme type on the currently selected tab.

3.4 Connection Types

3.4.1 Select Connection Type

HOBLink J-Term supports the following connection types:

- **HP700**: Allows for connections via TCP/IP with a Telnet server that supports HP700 emulations
- **Siemens 9750**: Allows for connections via TCP/IP with a Telnet server that supports Siemens 9750 (BS2000) emulations.
- **Siemens SINIX 97801**: Allows for connections via TCP/IP with a Telnet server that supports Siemens SINIX 97801 emulations.
- **Telnet / VT**: Telnet via VT is an application which uses TCP/IP (Transmission Control Protocol/Internet Protocol) and activates remote login at an ASCII host. TCP/IP provides connectivity functions for local area networks (LANs) as well as wide area networks (WANs), including data routing between LANs and WANs.
  Telnet requires a TCP/IP stack that supports the Windows Sockets v.1.1 interface.
  Defines the VT protocol for connecting to Unix hosts. Allows for using the functions of VT terminals from VT100 to VT525.
- **3270 (TN3270E)**: This is an application which uses TCP/IP (Transmission Control Protocol/Internet Protocol) and enables you to connect to a 3270 host.
  A TN 3270E configuration requires a TCP/IP stack that supports the Windows Sockets Version 1.1 interface.

- **5250 (TN5250)**: TN5250 allows for connections via TCP/IP with a Telnet server that supports 5250 emulations, e.g. an IBM AS/400 or a Communications Server for Windows NT.

For detailed information on these connection types, e.g., general options, security options, etc., please see the online help item for the desired connection type.

3.5 Host Printing

The following section describes the different ways of host printing provided by HOBLink J-Term.

3.5.1 GDI Print (Graphical Display Interface)

This mode is recommended. It meets most demands required by state of the art printing. Print data will be graphically processed on the PC and will then be forwarded to the printer.

This mode is the default print mode set by HOBLink J-Term.

3.5.2 Native GDI Windows Print (only for Windows)

The GDI Printer mode uses only Windows print functions for printing. This operation downloads DLLs from the Web Server and installs them locally.

Benefits

- Supports the printer selection dialog, which usually displays with every print job.
- Determines a specific printer or the default Windows printer defined on the system.
- Supports the highest resolution the printer is capable of. JAVA print, however, reaches its limitations by printing a maximum of 72 dpi.

3.5.3 Escape Print

This mode forwards the print data to the printer as text including the printer commands. They will be graphically processed at the printer. Escape Print increases performance by reducing the data volume forwarded to the printer (as compared with GDI print).

Escape print is required if the host print data stream contains printer escape sequences. Escape print uses Printer Definition Files. These contain the formatting information of the print data and can be configured individually.

For Escape print various print targets can be configured. For more information on this subject, please see the online help.

3.5.3.1 Escape Print with Windows

Escape print with Windows uses only Windows printing functions. This operation downloads DLLs from the Web Server and installs them locally.

Escape print with Windows is only available for the print targets **Port** and **Easy Print**!

Benefits

- Avoids problems certain (network) printers have with JAVA functions
- Allows the use of a locally attached USB printer.
- Supports the Windows default printer and allows its configuration.

3.5.3.2 Escape Print with JAVA

Escape print with JAVA uses only JAVA printing functions.

- **JAVA Print Basics**

When you send a host file to print, you are actually printing to a PC file. However, if the Printer Name specified in the session configuration is that of a target that the operating system recognizes, such as LPTn, the output is redirected to the target. If not, a file is created (with the name specified in the Printer Name field), and output is sent to that file. For example, if you enter "9.9.9.9" as the Printer Name, a file with that name is created (in the browser's working directory by default).

- **JAVA Print on Windows**

On Windows, print output goes to a printer if you enter any valid LPT number or a UNC (Universal Naming Convention, a default PC format for identification of Servers, printers and other devices in a network) name, such as `\\server_name\printer_name`.

- **JAVA Print on AIX / UNIX / LINUX**

Print output goes directly to a printer if you enter a device name such as `/dev/lp0`. However, printing to a network printer is a two-stage process:

1. Configure the session with the print target **File**. Enter a valid file name under File Path and Name (for example, `hprint.*`).
2. When the print job has finished, go to a command prompt and issue the appropriate command to send the file to a remote printer. For example, `lp-dprtq1 hprint.000` or `lpr-Pprtq1 -b hprint.000` (the name of the remote printer in this example is `prtq1`).

3.5.3.3 Configuring and Using Printer Definition Files

For every printer it is possible to define the properties (escape sequences) in the printer definition file. HOBLink J-Term reads these character strings for the specified printer and forwards them to the printer.

For printers that are not listed, you can create your own Printer Definition Files with an ASCII editor. Printer definition files must be named using the `*.gif` extension and be saved in the path `\<JTERMDIR>\www\lib\hob\comm\prt`.

3.5.3.4 Additional Print Options

Besides the configurable Windows functions you can specify additional options in the **Others** scheme>User Defined Options (Overview button in the online help). For more information on this subject, please see the online help.

3.6 Parameters for HOB EA Applications

The following parameters can be used when launching HOB EA applications.

They must be specified in the respective HTML pages.

The syntax of the entries varies, depending on whether you are running J-Term as an applet or as a Java application:

3.6.1 Parameters for the Applet

Parameter Name	Value	Description
`startup`	alphanumeric characters	Specifies the name of the HXML file defining the start up options that are used by the application. The `startup.hxml` file is specified as default, however marked as a comment only and therefore disabled. To use this file, delete the characters `xx` preceding the file name and save the changes. Customized HXML files with alternative options, must be placed in the following subdirectory of the installation path: `<installation directory>/www/lib/hob/props/` This directory can contain several alternative files with different startup options. They can be enabled anytime by specifying the respective file name in the HTML page. If the `startup` parameter is not specified, the HOB EA application is run with its default startup options and **typical default settings**. In this case you can also specify the parameter `webprofile`, to use a WebProfile defining the user settings
`webprofile=`	`y` or `n`	Default: `n` HOB EA application will be launched without using a WebProfile value: `y` HOB EA application will be launched by means of a WebProfile This entry is meaningless if the parameter `startup` is being used.
`userhome`	alphanumeric characters	This parameter specifies the valid User Home directory including its path. All startup options are stored in the subdirectory `\hob_jportal` of the respective path, e.g.: `C:\Program Files\Settings\`
`multihome`	`y` or `n`	Default: `n` By default this parameter is set as a comment and therefore not enabled. To enable this parameter delete the `xx` characters ahead of the parameter and save the changes. This option only affects MS Internet Explorer! Due to restrictions for HOB EA applications on Windows Terminal Servers user specific settings may not be stored in the default User Home directory. Enable the parameter to store the settings in the

		following directory: `/profile/<Username>/hob_jportal`
`username` `password`	alphanumeric characters	Specifies the user name or password for the logon to HOB Enterprise Access. HOBLink J-Term saves the user name and password locally on the PC! If the option "Use AutoLogon" (**HOB EA Administration**>**Utilities** menu>**Startup options...**>Logon tab) is disabled, user name (and password if applicable) used for the last logon will automatically display in the logon dialog. The logon data is stored in the User Home directory depending on the used Java Virtual Machine.

3.6.2 Parameters for the Application

Parameter Name	Value	Description
`-s`	alphanumeric characters	Specifies the name of the HXML file defining the start up options that are used by the application, e.g. `JTerm.exe -smystartup.hxml` We recommend to store customized HXML files in the following subdirectory of the installation path: `<installation directory>/www/lib/hob/props/` This directory can contain several alternative files with different startup options. They can be enabled anytime by specifying the respective file name in the HTML page. If the `startup` parameter is not specified, the HOB EA application is run with the settings stored in the file `startup.hxml`. If the file has not been edited and its settings have not been modified, the HOB EA application is run with its default startup options and typical default settings.
`-h`	alphanumeric characters	Specifies the path where to save user specific settings. The user must have write access to this path. e.g. `-hC:\Documents and Settings` If this parameter is not set the user specific settings are stored in the valid User Home directory`\hob_jportal` depending on the used Java Virtual Machine .
`-p`	alphanumeric characters	This parameter specifies the valid application installation directory. By default this parameter is specified in the affiliated `*.lax` file resident in the installation directory, for `JTerm.exe` consequently `JTerm.lax`. If this parameter is passed on running `*.exe` this will have no effect, since the entry in the `*.lax` is relevant.
`-u` `-g`	alphanumeric characters	Specifies the user name (`-u`) or password (`-g`) for the logon to HOB Enterprise Access. If you use the parameter to pass on the password you must enter it as plain text, which is a significant security risk. Therefore we do not recommend to use this parameter! HOBLink J-Term saves the data passed on using these parameters locally on the PC! The password will only be saved if the check box

		Save password is enabled in the logon dialog. If the option "Use AutoLogon" (**HOB EA Administration**>**Utilities** menu>**Startup options...**>**Logon** tab) is disabled the data passed on via the respective parameter will automatically display in the logon dialog. The data passed on via these parameters have higher priority than all other, locally stored data and will replace them. The logon data is stored in the User Home directory depending on the used Java Virtual Machine.
-b	alphanumeric characters	Specifies the context where the user will be searched. HOBLink J-Term saves the data passed on using this parameter locally on the PC, if in the Startup options the checkbox **Show button"Expand>>"** is enabled (**HOB EA Administration**>**Utilities** menu>**Startup options...**>**Logon** tab). In conjunction with the option "Use AutoLogon" (**HOB EA Administration**>**Utilities** menu>**Startup options...**>**Logon** tab) the data passed on via the respective parameter will automatically display in the logon dialog once you click the **Expand** button. The data passed on via these parameters have higher priority than all other, locally stored data and will replace them. The logon data is stored in the User Home directory depending on the used Java Virtual Machine.

3.6.3 Parameters for HTML Pages Using the Prefix "Auto"

Parameter Name	Value	Description
sun_url	alphanumeric characters	Specifies the name of a HTML page, that you are re-routed to, if a browser using Java2 is identified.
ms_url	alphanumeric characters	Specifies the name of a HTML page, that you are re-routed to, if MS Internet Explorer is identified as browser.
netscape_url	alphanumeric characters	Specifies the name of a HTML page, that you are re-routed to, if Netscape 4.x is identified as browser.
mac9_url	alphanumeric characters	Specifies the name of a HTML page, that you are re-routed to, if Mac OS 9 is identified as operating system.
msg	Y or N	Default: N Use the parameter Y, to display messages on the Java console, which will help you in analyzing errors once they occur.
target	_self _parent _top _blank <name>	Default: _self This parameter is relevant only, if the HTML page is displayed in a frame. To assign the page to a target frame, set the respective value. The values are interpreted as follows: _self opens the page in the same frame. For hyperlinks to targets that are displayed in the same frame it is not required to specify the target. It is only of importance if the page containing the hyperlink specifies a different target frame. _parent displays the target of the hyperlink in that window state, which was active prior to starting the frame set.

	_top uses the entire window frame to display the target of the hyperlink. _blank runs a new instance of the browser and displays the page, which is target of the hyperlink, in this new instance.. <name> specifies the name of a frame. If a the specified frame name does not exist, the browser opens a new window to display the hyperlink target.

3.6.4 Parameters for the Administration Tool "removeCC.html"

Parameter Name	Value	Description
ok_url	alphanumeric characters	Default: default.html By default this parameter is set as a comment and therefore not enabled. To enable this parameter delete the xx characters ahead of the parameter and save the changes. Specifies the name of a HTML page, that you are re-routed to after you have deleted local user settings.
removeall	alphanumeric characters	Default: N By default this parameter is set as a comment and therefore not enabled. To enable this parameter delete the xx characters ahead of the parameter and save the changes. Before deleting local user settings users will be prompted to confirm the operation. Use the parameter Y to suppress that dialog and delete the settings unnoticed by the users.

3.6.5 URL Parameters for WebProfile

If you run HOB EA applications selecting the connection model WebProfile the use of the startup.hxml (the file including the startup options) is not compulsory. You may alternatively append User Name (the name of the configuration object) and its context to the URL, specified in the browser, by using the following parameters.

Parameter Name	Value	Description
eaconfig=	alphanumeric characters	Specifies the name of the configuration object in HOB EA Administration, i.e. the User Name
eacontext=	alphanumeric characters	(optional) Specifies the context of the configuration object in HOB EA Administration an. This parameter is required only if the context you want to log on to is different from the defined default user context.

The parameters are appended to the HTML URL by typing a question mark (?). If the parameter eacontext is also required, you must append it by typing an ampersand (&), such as

```
http://www.hobsoft.com/EA/start.html?eaconfig=johnpublic&eacontext=business1,firm
```

3.7 HTML Pages

All HTML pages referenced below are located in the following subdirectory:

```
<installation directory>\www
```

Components	HTML pages
Summary of all HTML pages (Initial pages)	`default.html` The file name extensions _de, _en and _fr indicate the language-dependent pages. Enable JavaScript in the browser!
Initial page executing an automatic version check of the JVM available with the browser	`defaultMS.html`
Installing the HOB LDAP Extension	`hldap_de.html / hldap_en.html`

3.7.1 HTML Pages for Emulation / Administration Tools

Components	HTML pages
Display / Printer session	`JTerm.html`
Running HOBLink J-Term & JWT	`JLaunch.html`
Running JWT	`JWT.html`
Change password	`ChangePwd.html`
Create new user	`CreateUser.html`
Running the Local Variables Editor	`LocalVar.html`
Running the Startup Options Manager	`StartOpt.html`
Administration tool to configure HTTP Proxy	`HttpProxyEdit.html`
Administration tool to remove local user settings	`removeCC.html`

All HTML page listed in the above table are also available in combination with certain prefixes and suffixes. Their meaning is described in the table below:

Description	HTML prefix / suffix
HTML pages with this prefix perform an version verification of the JVM provided by the browser. Parameters defined in the HTML page re-route you to an initial page matching the JVM.	`Auto*.html` (e.g. `AutoJTerm.html`)
HTML pages with this suffix work only with browsers using Java2 (Netscape 6/7, MS Internet Explorer with PlugIns and Mac OS X).	`*J2.html` (e.g. `JTermJ2.html`)

HTML pages with this suffix run only on Macintosh computers with operating system OS 9 or lower.	`*Mac.html` (e.g. `JTermMac.html`)

3.7.2 HTML Pages for Secure SSL Connections

Components	HTML pages
Display / Printer session using a secure connection	`JTermSecure.html`
Running HOBLink J-Term & JWT using a secure connection	`JLaunchSecure.html`
Running JWT using a secure connection	`JWTSecure.html`

3.7.3 HTML Pages for the Cached Client / SSH Security

For cached clients and/or SSH security, no default HTML pages are provided. However, you can create these pages conveniently using the Startup Options Manager's HTML wizard, which is part of the tool **HOB EA** Administration (menu **Utilities**>**Startup options...**>menu **HTML Pages**>**Create...**). Select **Cached Client** as Client Type and enable the checkbox **Use SSH Security**, if you want to use SSH.

3.8 Additional Tools

The following tools are not required to run HOBLink J-Term. However they are practical tools, which make it easier to work with HOBLink J-Term:

- **Demohost** (`<JTERMDIR>\tools\demohost`)
  Trace tool to simulate 3270-, 5250- and VT data.
  For further information refer to the file ReadMe.txt in the specified path.
- **Export** (`<JTERMDIR>\tools\Export`)
  Tool used to export users and groups from Windows NT and Novell networks to a file for later import in HOB Enterprise Access.
- **HLL Bridge** (`<JTERMDIR>\tools\HllBridge`)
  Contains all files required for the EHLLAPI interface of HOBLink J-Term including a sample program and supplementary tools.
- **hostname** (`<JTERMDIR>\tools\hostname`)
  Tool used to verify the IP configuration of the WebServer.
  For further information refer to the file ReadMe.txt in the specified path.
- **HXML Editor** (`<JTERMDIR>\tools\HXMLEdit`)
  Tool used to edit HOB Enterprise Access HXML files.
- **TCP Trace** (`<JTERMDIR>\tools\TCPTrace`)
  Windows Trace tool to record TCP/IP data.
- **VTprint** (`<JTERMDIR>\tools\VTprint`)
  Tool used to forward UNIX files to a printer via the VT emulation
  For further information refer to the file ReadMe.txt in the specified path.

3.9 COM Interface Support

HOBLink J-Term supports the COM Interface.

You can enable this Interface by installing the HLLAPI-COM-Extension from the HOB Enterprise Access CD.

A detailed description for the COM Interface is provided in the help file `COMInterface.hlp`, which you can find in the installation directory of the extension.

3.10 Information about EHLLAPI-Bridge

3.10.1 Requirements

Using the EHLLAPI Bridge requires that the following software be installed:

- Windows 95 / 98 NT / 2000 / XP
- Internet Explorer version 4.01, Service Pack 2 and the updated Java Virtual Machine, or later, or Netscape Navigator 4.7x or later

3.10.2 How to Install the EHLLAPI Bridge

1. Install the HLLAPI-COM-Extension from the HOB Enterprise Access CD.
   This copies all required HLLAPI or COM files to the PC and additionally the system path is extended by the installation path.
   Since other emulations use DLLs with identical names, the order of the path entry is relevant to get EHLLAPI working. If other emulations already use HLLAPI, ensure the HOBLink J-Term installation path to be specified prior to all other emulations in the system path. If you do not comply with this policy other DLLs of the same name might be used instead, which do not allow communication with EHLLAPI application under HOBLink J-Term.
2. Then run HOBLink J-Term and the HLLAPI applications that you like to work with.

3.10.3 Supported Subsets

Currently HOBLink J-Term supports the most familiar subsets.

3.10.4 Sample Program

The directory `<HLLAPI installationpath>/samples` contains a sample program which uses the EHLLAPI Bridge.

3.10.5 Tools for Diagnosing Errors

For error cases HOBLink J-Term also provides a tracer for the EHLLAPI communication an testing tool. These tools are located in the following path:

`<HLLAPI installationpath>/HLLAPI Tools/HLLBridgeTrc.exe`

This tracer registers all actions of the EHLLAPI communication and provides important information about errors that have occurred during the communication.

```
<HLLAPI installationpath>/HLLAPI Tools/ApiTester.exe
```

1. Run the testing tool, to test if the EHLLAPI Bridge works fine.
2. Select **API** menu>**Load Library**.
3. Select the file `<HLLAPI installationpath>/PCSHLL32.DLL` in the list box.
4. Click **OK**. The functions API/Function Group 1... to Group 3 will be enabled.
5. Call those functions in the **API** menu and test them consecutively.
6. Exit the testing tool by selecting **File** menu>**Exit**.

3.11 Introduction to Open Host Interface Objects for Java

The Open Host Interface Objects (OHIO) implemented in this product is a programming interface for host access that is still subject to development. The current version complies with the OHIO API definition in the second draft of the Open Host Interface Objects Internet Draft. OHIO API originates from IBM and Attachmate and HOB has also fully implemented the OHIO API and favors the use of OHIO API supported programming.

The Open Host Interface Objects (OHIO) provides the basic classes and methods that allow the development of platform independent applications that can access host information at the data stream level. OHIO implements the host access function in a complete class model, which is independent of any graphical display and only requires a Java-enabled browser or similar Java environment to operate. The class library represents an object-oriented abstraction of a host connection that includes reading and writing the host presentation space, enumerating the fields in the presentation space, reading the operator information area (OIA) for status information, and performing asynchronous notification of significant events.

Using OHIO, programmers can generate Java applets that manipulate data from the host presentation space without requiring the users to have the applets residing on their machines. The presentation space represents a virtual screen that contains both data and associated attributes presented by host applications. OHIO Java applets enable the following functions:

- Opening a host session
- Waiting for incoming host data
- Getting previously selected strings from the screen
- Getting associated attributes of the strings
- Setting new string values
- Returning function keys to the host
- Waiting for the next host response

After executing an interaction the applet can optionally switch to other tasks or simply close the session. The entire operation can be done without ever showing host screens.

OHIO implementation provides the following additional benefits:

- Its source code is 100% Java and thus is platform independent.
- OHIO can be downloaded and executed on client workstations via standard Web and Java technology. This guarantees major maintenance and resource savings.

For more detailed information, please refer to the online help.

3.12 Macro Import Utility

This utility imports macro files (*.mac) created by means of IBM Personal Communications into the applications HOBLink TE / HOBLink J-Term. During the import procedure the macro syntax of the files is converted to the HOBLink specific format. Afterwards you can execute the macros or edit them using the Macro Editor as desired.

Options

Folder

Displays the folder, which is searched for macros. Usually, when running the utility the specific IBM Personal Communications path is displayed, where the macros are stored by default. If no entry is shown in the edit field, use the **...** button to search for an appropriate path.

...

Determines folder / path for the macro search. All macros found in the search path will be shown in the list box.

Select All

Selects all macros shown in the window.

Unselect All

Unselects all macros shown in the window.

Import

Imports the currently selected macros to the local user settings of the currently connected user, whereby one scheme is created respectively for each macro.

Close

Exits the utility and closes the window.

4. HOB Telnet Resource Manager

The Telnet Resource Manager, in the following abbreviated as TRM, allows you to centrally administrate and configure all TN3270 and TN5250 Resource Names of HOBLink J-Term / HOBLink TE, instead of entering them one by one for each session.

The only elements that can be configured are containers (in HOB EA Administration represented by) and "Organization Units" (only LDAP) (in HOB EA Administration represented by).

The dialog shows the existing sessions in one column and next to them on the right the column for the configurable resources.

4.1 Configure Resource Names using TRM

1. Run **HOB EA Administration**.
2. Select desired database item in the tree structure, to which you want to assign a configuration.
   The only elements that can be configured are containers and "Organization Units" (only LDAP).
3. In the dropdown list at the right bottom of the application window select "Telnet Resource Manager."
4. Select **Configure** button or .
5. To configure or change Resource / Device Names, double-click the desired cell in the respective column labeled as Resource.
6. Enter desired name.
7. Click outside the cell to apply the name.
8. Select **File** menu>**Save** to save the entry and close TRM.

To use the Resource Names configured through TRM you must configure the TN3270 or TN5250 sessions accordingly.

4.2 Configure TN3270 and TN5250 Session Resource Names

4.2.1 There are three different ways to these resource names:

1. In the Current Session

Select the **User Settings** button in the toolbar.
The tree structure of the **Session Editor** opens.

This function is only available if your system administrator has granted you the required user rights (only applicable if installed with HOB Enterprise Access).

2. Via the Session Manager

1. Activate or run the **Session Manager**.
2. Select name of the desired session.
3. Click on the **Edit...** button.
   The tree structure of the **Session-Editor** opens.

This function is only available if your system administrator has granted you the required user rights (only applicable if installed with HOB Enterprise Access).

3. Centrally via HOB EA Administration

1. Run **HOB EA Administration** on the server, administrating the data base of all HOB EA users.
2. If required, open a particular level and select a data base item, the settings of which you want to modify.
   (data base items Containers, Groups are shown on the left, Users and Objects are shown on the right pane).
3. In the list box at the right bottom right select "HOBLink J-Term 3.x" and click **Configure**.
   The tree structure of the **Administration** displays.

4.2.1.1 After you have selected one of the above-mentioned methods, proceed as follows:

1. (Open **Schemes** level.
   Only applicable for **Session Manager** / **HOB EA Administration**.)
2. Select desired **Connection scheme** type (only available for Connection Types 3270 and 5250) or, if not available, create a new scheme with **New...**.
3. Under **Resource / Device Name** insert wild card "Telnet Resource Manager" using the arrow button next to the edit field.
   If desired, you can combine the Resource Name with any other wild card.
4. Repeat steps 1-3 for all sessions that are to use Resource Name previously configured by Telnet Resource Manager.
5. Click **Close** to save changes and close the Session Editor.

For more information on this subject, please refer to the online help.

4.2.2 Importing and Exporting Configured Entries

The benefits of TRM is the import and export function of created configurations, which, for instance, can be edited and enhanced to meet your demands using MS Excel. After completing all edit operations, you can re-import the file through TRM.

To verify, if the edited file is in accordance with the syntax, required by TRM, before importing the file you can test it by running **File** menu>**Verify**. If this verification is successful a confirming message is displayed.

4.2.3 Export TRM file

1. Run **HOB EA Administration**.

2. Select desired database item in the tree structure, whose configuration you want to write in a file.
   The only elements that can be selected are containers and "Organization Units" (LDAP only).
3. In the dropdown list at the right bottom of the application window select "Telnet Resource Manager."
4. Select **Configure** button or .
5. Select **File**>**Export** to export the file to text file format.
6. Enter a poignant file name and select **Save**.
   By default the file name `export` is suggested in the edit field.
7. Run MS Excel.
8. Open the file using the file type option **Text files (*.prn; *.txt; *.csv)**.
9. Select **Separated** as file type.
10. Select **Next >**.
11. Select **Colon** to display the entries in table format.
12. Select **Next >** to show the preview.
13. Select **Finish** to open the file. The entries are arranged in columns.
14. Edit the file as desired and save the changes.

4.2.4 Import TRM files

1. Run **HOB EA Administration**.
2. Select desired database item in the tree structure, to which you want to assign a configuration.
   The only elements that can be configured are containers and "Organization Units" (only LDAP).
3. In the dropdown list at the right bottom of the application window select "Telnet Resource Manager."
4. Select **Configure** button or .
5. Select **File**>**Import**.
6. Enter file name and select **Open**.
   The current configuration will be definitely overwritten by the new import data.

5. Error Messages

5.1 Common Error Messages

- **4001**

TN3270 connection was rejected by server. Resource / Device Name may not be available or already in use.

- **4002**

Connection was rejected by server. The client used the CONNECT command to request a specific Printer Session, the requested Resource / Device Name, however, adheres to a Display Session.

- **4003**

Connection was rejected by server. The requested Resource / Device Name is already associated with another Telnet session.

- **4004**

Connection was rejected by server. The client used the ASSOCIATE command and either the Session Type is not a Printer Session or the Resource / Device Name is not a Display Session.

- **4005**

Connection was rejected by server. The Resource / Device Name specified in the CONNECT or ASSOCIATE command is not known to the server.

- **4006**

Connection was rejected by server. Server does not support the requested Session Type.

- **4007**

Connection was rejected by server. Requested Resource / Device Name is incompatible with requested Session Type (such as Display or Printer Session).

- **4008**

Connection was rejected by server. Server is unable to satisfy the Session Type of request sent by the client; e.g., a specific Display or Printer Session was requested but the server does not have such a pool of Resource / Device Names defined to it, or the ASSOCIATE command was used but no partner Printers are defined to the server.

- **4009**

Connection was rejected by server. Any other error in Session Type or Resource / Device Name processing has occurred.

- **4010**

Error in host data. Printer Session has received data bound for a Display Session. Verify Session configuration or host log mode.

- **4011**

Error in host data. Display Session has received data bound for a Printer Session. Verify Session configuration or host log mode.

- **4012**

Error in host data. TN3270 Session has received HOBCOM data. Verify Session configuration or host log mode.

- **4020 to 4059**

Error in host data.

- **4060**

Error in Telnet communication data.

- **4061**

Error sending communication data.

- **4062**

Error sending communication data (ASCII mode).

- **4070 to 4079**

Error executing a file transfer.

- **4100 to 4200**

Internal application errors.

- **5101**

No HOBCOM Session (Terminal type is not 0x11).

- **5103**

Connection aborted by user.

- **5105**

UserID is missing.

- **5106**

Host error message (unknown user).

- **5107**

Host error message (invalid password).

5.2 SSL Error Messages

The following is a listing and short description of all SSL-related error messages.

- **2**

The SSL component is not part of the software and is subject to further charge. Contact any HOB branch office for information on purchase.

- **3**

Could not read the Certificate data base file "hclient.cdb" or the SSL configuration file "hclient.cfg". In case the applet is running the files should be in the User Home Directory (see parameters userhome and multihome), in case the application is running the files should be in ...\www\lib\sslpublic directory.

- **4**

File hob.ssl.hssldpro class could not be found. Probably HOBssl.jar (Netscape) or HOBssl.cab (MS IE) is either not included in the Applet archive (when running the Applet) or it is not included in the Classpath of the corresponding LAX file (when running the application).

The SSL component is not included in installations that are downloaded from HOB's web site www.hob.de. This component is not part of the purchased software and is subject to further charge. Contact any HOB branch office for information on purchase.

- **5**

Logon to HTTPS Proxy failed.

For detailed information about this error refer to the messages of the JAVA console.

- **6**

Logon to HTTP Proxy failed after three attempts using invalid User Name and/or Password.

- **94**

Connect timeout occurred (TCP transmit timed out)

- **95**

Connect timeout occurred (TCP receive timed out).

- **96**

Connection closed from the remote site during handshake.

- **97**

Connection closed, probably remote site does not support SSL/TLS protocol or a fatal handshake error occurred.

- **140**

Server requested a client certificate but no certificate of the requested type is available (only with SSL and Client authentication simultaneously).

- **141**

Renegotiate request not accepted.

- **142**

Fatal protocol alert received from remote site causing a disconnect (maybe attack from outside).

- **160**

Compression method after connection interruption is different.

- **162**

Compression method sent by client is unknown to server.

- **181**

Protocol version used by server is not supported by client.

- **186**

Server selected Cipher Suite is not included in client list or requested Cipher Suite is different after connection interruption.

- **188**

Server selected compression method is not included in client list or requested compression is different after connection interruption.

- **210**

Invalid data length of received certificate.

- **211**

Despite enabled client authentication the requested certificate was not received by server in the data stream.

- **212**

No certificate received from server.

- **213**

Corrupted certificate list/chain received.

- **215**

Received certificate cannot be used for the selected key exchange mode.

- **216**

The certificate's public parameters cannot be extracted.

- **217**

DH parameters in the certificate do not match the local used parameters.

- **219**

Certificate chain verification encountered an unspecific error within the chain.

- **220**

Client authentication enabled: there is no (Subject) Common Name in the certificate received by client.

- **221**

The Server's Subject Common Name of the certificate is not contained in the known server names list.

- **222**

The Client's Subject Common Name of the certificate is not contained in the known client names list.

- **223**

The Client's Subject Common Name of the certificate is contained in the excluded client names list.

- **224**

No root certificate found in the data base for the received certificate list (chain).

- **225**

Certificate or parts/all of the chain were revoked (at least one certificate).

- **226**

Certificate or parts/all of the chain have expired.

- **227**

Certificate/chain was rejected due to a non explicitly specified error.

- **230**

Invalid data length detected in Certificate Request Message data.

- **231**

Server requested a client certificate but has not sent a certificate of its own.

- **232**

Requested certificate types list contains an invalid size field.

- **233**

Requested certificate type is not supported by client.

- **234**

Invalid size filed in the received certificate list

- **235**

Certificate search failed while internally processing Diffie Hellman parameters.

- **236**

Error searching a certificate matching the request of the connection partner.

- **237**

When the client authentication is enabled, the verification of the client certificate chain on the basis of the issuer-name list of certificates requested by the server is unsuccessful. You may have to enable the option **Exact certificate Issuer/Subject items match** in the Server configuration (*.cfg) of the entry "Protocol Control" displayed in the HLSecurity file tree.

- **240**

Server key exchange message/data length is invalid.

- **242**

Conversion of internal RSA parameters of a certificate on the client side failed.

- **244**

Conversion of internal Diffie Hellman parameters of a certificate on the client side failed.

- **245**

Server specified an unknown key exchange mode.

- **247**

Signature of server key exchange message invalid (RSA).

- **248**

Signature of received temporary key exchange data is not valid.

- **250**

Certificate verify message / data length is invalid.

- **252**

RSA-Decryption of signature invalid.

- **253**

Received signature is not valid.

- **254**

Unknown signature algorithm was specified (internal error).

- **260**

Invalid data length detected in Certificate Request Message data on server side.

- **262**

The Diffie Hellman public value received on the client side does not match the Diffie Hellman parameters.

- **264**

Conversion of the key's Diffie Hellman public value failed on the server side.

- **265**

Generation of the Premaster secret from Diffie Hellman parameters and values failed.

- **266**

Unknown key exchange mode on the server side was detected while processing internally.

- **270**

Invalid data length detected in Certificate Request Message.

- **271**

Received handshake messages MAC does not match own calculated MAC.

- **280**

An unknown key exchange mode was detected while processing internally.

- **281**

Generation of internal certificate chain generation failed.

- **282**

Converting certificate's private key parameter failed internally.

- **283**

Internal TLS/SSL certificate list generation failed

- **284**

The requested certificate was not found on the client side.

- **286**

Internal generation of a certificate list from selected end-certificate failed.

- **290**

Unknown key exchange mode was detected while internally processing the Certificate Request Message.

- **291**

The internal generation of relative distinguished names list failed while processing the Certificate Request Message.

- **300-305**

Internal processing of RSA / Diffie Hellman key parameters failed while negotiating the key exchange.

- **306**

Unknown key exchange mode was detected while internally processing the key exchange data on the client side.

- **307-308**

Internal processing of RSA / DSA signature parameters failed on the client side while negotiating the key exchange.

- **320**

Unknown asymmetric key algorithm was detected while verifying the certificate.

- **321**

Internal private parameter extraction from certificate to be verified failed.

- **323-324**

Generation of RSA / DSA signature of handshake messages failed while verifying the certificate.

- **325**

An invalid signature algorithm was detected while verifying the certificate.

- **330-334**

Internal processing of RSA / Diffie Hellman key parameters failed on the server side while negotiating the key exchange.

- **335**

Unknown key exchange mode was detected while internally processing the key exchange data on the server side.

- **410**

Configuration password decoding from password file failed.

- **411**

Password for configuration file does not match.

- **412**

Certificate data base password decoding from password file failed.

- **413**

Password for certificate data base file does not match.

- **414**

Processing of configuration file data failed or file not found.

- **415**

Processing of certificate data base file data failed or file not found.

- **416**

Generating certificates tree from certificate data base failed, usually due to corrupted certificate data base or malformed certificates in data base.

- **417**

There is no certificate with a private key in the data base but the server needs at least one certificate of that type.

- **418**

Generating root certificates failed, usually due to corrupted certificate data base or malformed certificates in data base.

- **421**

For the cipher suites selected in the configuration no matching certificate(s) could be found. Check server configuration / certificate data base.

- **583**

Maximum number of configured connection is exceeded. No more sockets available from Java socket interface.

- **775**

RSA signature generate failed

- **776**

RSA signature verify decryption error

- **777**

Given RSA Signature different from own generated

- **6100**

The current version of your installation does not support the interface for external certificate stores.

- **6101/6104**

The interface for external certificate stores cannot be loaded.

- **6110-6112**

The interface for external certificate stores has forwarded incorrect or incomplete certificate data to the application for the Client authentication. Verify the certificates in the external certificate store (e.g. to ensure the certificate chain is complete).

- **6113**

The interface for external certificate stores has forwarded no data, incomplete or incorrect certificate data to the application. Verify the certificates in the external certificate store (e.g. to ensure the certificate chain is complete).

- **6115-6118**

The interface for external certificate stores has forwarded incorrect or incomplete certificate data to the application to verify the Server authentication. Verify the certificates in the external certificate store (e.g. to ensure the certificate chain is complete).

- **6120/6121**

Invalid or incomplete data forwarded to the application by the interface for external certificate stores. Verify your personal end user certificates.

- **6125-6127**

The data signature using the key parameters of the selected end certificate from the external certificate store could not be executed or has produced an error.

- **6202**

The file specified in the configuration (cfg), which explicitly selects the external certificate store, was not found.

- **6203 / 6204 / 6210 - 6214**

Error accessing internal interface functions. Possibly parts of the installation were modified or removed.

- **6221 / 6222 / 6229-6231 / 6235 / 6237-6238 / 6240**

Internal error accessing the external certificate store.

- **6241-6243**

Certificate verifying the Server certificate was not found.

- **6250-6251 / 6255-6256 / 6260**

Internal error accessing certificates in the external certificate store.

- **6261-6266**

Error accessing certificate chains in the external certificate store.

- **6267-6268 / 6271-6275**

Error accessing the external certificate store.

- **6291-6297**

Internal error attempting to find a user certificate in the external certificate store.

- **6299-6300 / 6308 / 6314**

Error accessing the external certificate store.

- **6315**

No matching certificate was found in the external certificate store.

- **6316-6319**

Error accessing internal interface functions. Possibly parts of the installation were modified or removed.

- **6322**

The dialog to select certificates was aborted by the user.

- **6323**

Internal error accessing certificates in the external certificate store.

- **6324**

The dialog of a Crypto Service Provider was aborted by the user.

- **6325-6326**

Certain parameters of the detected certificate are not available or are invalid. Verify the user certificates installed in the external certificate store.

- **6330-6336**

Error accessing certificate chains of the user certificate in the external certificate store.

- **6337-6338 / 6341-6345**

Error accessing the external certificate store.

- **6361-6362 / 6368-6369 /6378 / 6390-6391**

Error accessing the external certificate store.

- **6395-6396**

Error accessing certificate chains of the user certificate in the external certificate store.

- **6397**

Search for a certificate providing the appropriate properties required for user authentication failed. Verify the user certificates installed in the external certificate store.

- **6401-6406**

Error accessing certificate chains of the user certificate in the external certificate store.

- **6407-6408 / 6411-6415**

Error accessing the external certificate store.

- **6420**

No certificate found for user authentication. Verify the user certificates installed in the external certificate store.

- **6422-6429**

Executing the signature function in the external certificate store failed. Verify the installation of all components permitting access to external certificate stores.

- **6431-6432 / 6439 / 6448**

Error accessing the external certificate store.

- **6449 / 6465-6466 / 6487**

Certain parameters of the detected certificate are not available or are invalid. Verify the user certificates installed in the external certificate store.

- **8000-8065**

SSH error in the provided parameters, in the configuration or the initialization.

- **8070**

The SSH component is not part of the software and is subject to further charge. Contact any HOB branch office for information on purchase.

- **8071**

HOBssh.jar (Netscape) or HOBssh.cab (MS IE) and HOBssl.jar (Netscape) or HOBssl.cab (MS IE) are not installed or were not found.

The corresponding entries in the HTML/Java Web Start pages could be missing. To add them, use the HTML/Java Web Start pages Wizard in the Startup Options Manager of the tool **HOB EA Administration** (menu **Utilities**>**Startup options...**>menu **HTML Pages**>**Create...**). Enable the option **Use SSH Security**.

The SSL component is not included in installations that are downloaded from HOB's web site www.hob.de. This component is not part of the purchased software and is subject to further charge. Contact any HOB branch office for information on purchase.

- **8100-8140**

Error in the SSH configuration parameters.

- **8200-8266**

Error in the SSH packet connection processor. send/receive error, packet length error, socket error, send/receive thread error.

- **8300-8345**

Error attempting an SSH connection.

- **8350**

Authentication failed. This could have the following causes:
- invalid password
- invalid or missing private key on the Client
- invalid or missing public key of the Client on the Server

- **8351-8358**

Error attempting an SSH connection.

- **8360**

IP address for SSH Server Host is not available.

- **8361-8367**

Error processing the so-called SSH Hostkeys.

- **8370**

Authentication of SSH Server Host failed.

- **8383**

Server not found. Invalid TCP/IP Address or Port.

- **8400-8412**

Error in SSH Key Exchange Processor.

- **8420**

The host specified for the SSH connection could not be verified.

- **8421**

Host not found in the SSH Known Hosts file. Add the host name to this file or allow all hosts for connection.
For further information refer to "Known Hosts" in the index of HOB EA Administration online help.

- **8422-8451**

Error in SSH Key Exchange Processor.

- **8460-8661**

Error in SSH Channel Handler (Channel RX/TX data error, Channel Thread error or Socket error).

- **8680-8961**

Error accessing various libraries (invalid parameters or error in library functions).

- **8970-8994**

Java Clients error (Socket Class error, Input Stream error or Output Stream error).

- **9000-9050**

Error in SFTP Interface Library.

6. Glossary

1. Display Session

If a session is defined as a display session, you can use it on a PC to start host applications and take advantage of all the functions of a terminal.

The OIA (Operator Information Area) appears and shows the current connection status. To obtain detailed information about the connection, please refer to the online help.

2. EHLLAPI Interface

EHLLAPI is a programming interface for Windows operating systems that is supported by HOBLink.

HOBLink is fully IBM compatible and additionally supports the functions 120 - 127. These functions support a connection to structured fields, e.g. read and write structured fields.

The appropriate DLL name depends on whether a 16-bit or a 32-bit EHLLAPI application is linked.

3. Express Logon (Definition)

When starting a session using Express Logon, the HOBLink J-Term client establishes an SSL connection with TN3270 server. During the logon process, a macro with the Express Logon information is played. Once the session is established, the client sends the application ID for the host application that the user is accessing to the TN3270 server. This information is contained in the logon macro. The TN3270 server uses the client's certificate information from the SSL connection and the application ID received from the client, and requests the user ID and password from the host access control program (such as IBM RACF).

The HOBLink J-Term client uses the macro function to put predefined variables strings in the user ID and password fields. The TN3270 server substitutes the user ID and password in the appropriate place in the 3270 datastream. The logon is completed.

4. HOB Beans

JavaBeans represent a component software architecture from Sun that runs in the Java environment. JavaBeans are independent Java program modules that are called for and executed. They have been used primarily for developing user interfaces at the client side.

JavaBeans enable software developers to design and create reusable pieces of software that easily integrate with each other, with applets or applications, and even with development tools.

5. Macro

A macro is a sequence of key and host commands which can be executed in a single step.

You can execute recorded macros (HOBLink session>**Macro** menu>**Record**) in a number of different ways:

- Assign a key (Session Editor>**Keyboard** scheme)
- Assign a Keypad key (Session Editor>**Keypad** scheme)
- Assign a mouse button (Session Editor>**Mouse** scheme)
- Assign a Hotspot (Session Editor>**Hotspots** scheme)
- Assign a menu command (Session Editor>**Menu** scheme)
- Assign a toolbar button (Session Editor>**Toolbar** scheme)

A macro can contain the following elements:

1. Function Keys
2. Characters
3. Key Sequences
4. Other Macros
5. Wait conditions
6. Commands for executing Windows, DOS programs and JAVA applets

6. OIA

The OIA (Operator Information Area) is located at the bottom edge of the HOBLink Window. It contains information in the form of characters and symbols about the Host session status and the active application.

All error messages are displayed in the OIA. When an error message appears, you can double-click on the OIA to get further information on the cause, problem and possible response for error correction.

You can change the color of the OIA in the **Session Editor** under the **Color** scheme>**Category** "Others."

7. Printer Definition File

A Printer Definition File (PDF) is an ASCII file that contains variables (symbolic names for assigned control codes) formatting controls, and character definitions. You can edit a PDF with an ASCII text editor to customize it for your printer. In general most printers support similar commands for basic functions, but they differ widely in their support for more advanced functions.

8. Printer Session

If a session is defined as a printer session, you can use a PC printer as a host printer.

The OIA also appears here (as in the display session) and shows the current connection status. To get detailed information about the connection, please refer to the online help.

9. PRNTrace.txt

This is a printer trace file that is automatically generated when you enable **Printer Trace** in the **Host Printer** scheme>**Printer** tab (Printer Session only).

10.Schemes

HOB EA applications use schemes in which the specific settings of each session are saved. Settings are grouped logically and assigned to a certain scheme which is displayed in the tree structure of the Session Editor.

Applies to HOBLink J-Term only:
Display and printer session use identical schemes in many cases, but also necessarily include schemes to accommodate settings that are specific to that type of session.

As long as no schemes have been created, you can also obtain information about the scheme type on the currently selected tab.

11.Requirements for SSL/TLS Security

Enable the option "Use SSL/TLS Security" in the **Connection** scheme only if HOBLink Secure (subject to further charge) has been registered.

Not all Connection Types support SSL/TLS!

You can obtain further information about this software from our HOB Offices.

First configure the corresponding settings with the HOBLink Security Manager. You'll find additional details in the Online Help for the HOBLink Security Manager.

Then copy the files (aka HLSecurity Unit) created by the HOBLink Security Manager according to the following description:

- **Paste Server files (for EA Server / Proxy Server)**

  Copy the files `hserver.*` to the installation directory of the respective Server:

  `<install>\sslsettings`

- **Paste Client files (HOBLink J-Term/JWT)**

  Copy the files `hclient.*` to the User Home directory of the respective Client.

If the password file `hclient.pwd` has not been copied to the specified folder, you will be prompted automatically to enter your password for the certificate while logging on.

- **Alternative paste operation (if Client authentication is not used)**

  Copy the files `hclient.*` to the following directory of the Web Server:

  `<install>\www\lib\sslpublic`

SSL certificates are downloaded from the web. For security reasons we recommend to download them only using HTTPS.

12.Templates for File Transfer

You can use templates to specify the criteria that are used for automatically generating local final names (PC file names) from remote file names (host file names) and vice versa.

Templates are the same for all sessions and can be used for both sending and receiving data.

In addition, templates control the following:

- The format in which the data is transferred. As a default, there are two types of templates available, for binary format and for text format.
- The conversion into another character format (e.g. ASCII into EBCDIC).
- Send and receive options (e.g. data record format, block length)
- Information about naming modalities to be used for generating files / file formats and the use of wildcards (*) (e.g. all local file names with the extension *.text are renamed with the remote file name *.txt.

When file names are created, the existing templates are searched starting with the one ranked in the first position. The first template which contains the entries being searched for will be used.

7. Index

A

8

additional options for HOBLink J-Term 23

Administration Tools

  Macro Import Utility 36

D

dialogs..... 26

Display Session..... 22, 41

E

EHLLAPI interface

  EHLLAPI-Bridge..... 34

  File Transfer in a DOS window 41

EHLLAPI interface..... 41

Express Logon configuration

  ~ definition 41

F

File Transfer

  templates..... 43

File Transfer 43

G

Glossary 22, 26, 41, 42, 43

H

HLSecurity Unit..... 43

HOB Beans..... 41

HOB Telnet Resource Manager 37

HOBLink J-Term Session Editor 21

HOBLink J-Term Session Manager..... 19

HOBLink Secure..... 43

HOBLink Session..... 42

Host Printing 27

I

Introduction 19

M

Macros

  Definition 41

Macros 41

O

OIA..... 42

Operator Information Area 42

P

Printer Session 22, 42

Printing 27

PRNTrace.txt 42

S

schemes..... 26, 42

Secret HOBLink J-Term 23

SSL/TLS Security 43

T

Telnet Resource Manager 37

templates 43

U

User Defined Options..... 23